

PATENT
2503-1141

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of

Salvatore LO PRESTI et al.

Conf. 3504

Application No. 10/527,325

Group 1711

Filed October 28, 2005

Examiner Gennadiy Mesh

PET ARTIFICIAL AGGREGATE FOR THE PREPARATION
OF LIGHTENED CONCRETE

DECLARATION UNDER RULE 132

Assistant Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Salvatore LO PRESTI, hereby declare as follows:

I am one of the inventors of the above-identified U.S.
patent application.

I have read the Official Action mailed April 14, 2008,
and I am familiar with the present application. In reviewing the
Official Action, there is no apparent appreciation for the claimed
method. In particular, there is no appreciation for the combined
vibratory movement and rotational mechanical movement, which forms
aggregates capable of withstanding heavy loads without further
treatment, and under increasing pressure the granules have
increasing compressive strength.

To show that the claimed process, illustrated by Steps 1-7
on pages 5 and 6, results in a granule having an increasing



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compressive strength, I have performed the following laboratory tests.

The Claimed Process

Claim 14, step a) is illustrated by STEP 1.

Claim 14, step b) is illustrated by STEP 2 ("subjecting the PET flakes to a thermal and mechanical process") and STEP 3 ("applying at the same time a vibratory and rotational movement").

Claim 14, step c) is illustrated by STEP 4.

Claim 16, step d) is illustrated by STEP 5 ("surface flaming"), STEP 6 ("rolling on sand"), and STEP 7 ("obtain coated PET granules").

The Claimed granules

Granule type A: the flake aggregates of claim 14 obtained in step b).

Granule type B: the PET granules of claim 14 obtained in step c), e.g., as recited in claim 17.

Granule type C,D: PET granules obtained from claim 16, step d), e.g., as recited in claim 18.

Claim 17 is illustrated by STEP 7, e.g., PET granules coated with sand obtained by the process of claim 16.



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Laboratory Tests on Lightweight PET Aggregates

Specific laboratory tests carried out on type A granules at GEOLAB srl Laboratory and METRO srl Laboratory (both certified by the Italian Cabinet of Public Works to carry out such tests) show the following values:

- Density 1.400 kg/m³
- Fusion Temperature 265°C;
- Inflammability Temperature 370°C;
- Auto-ignition Temperature 500°C.

Cylinder samples of type A granules, prepared with the same quantity of flakes but submitted to differing pressures, show increasing values of compressive strength (see Table 1).

Table 1

Number of sample	Reduction of volume(%)	Height (mm) [30 mm]	Volume (mm ³)	Weight (g)	Density (kg/m ³)	Break (N/mm ²)
1	15	26	11752	7.6	646.70	5.5
2	25	22	9944	7.56	760.26	6.8
3	40	18	8362	6.84	817.99	13.8
4	50	15	6780	6.21	915.93	15.3
5	55	13.5	6102	6.03	988.20	18.9

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Laboratory Tests on lightweight PET granules for fillings
(type A granules)

Table 2

Diameter (mm)	>35
Heap Weight (kg/m ³)	400
Grain Weight (kg/m ³)	560
Surface	Not sanded
Water Absorption	Negligible

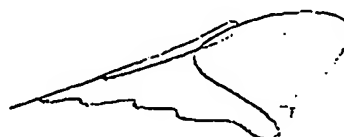
Laboratory Tests on lightweight PET aggregate for non-structural
concrete (type B granules)

Table 3

Diameter (mm)	15-35
Heap Weight (kg/m ³)	400
Grain Weight (kg/m ³)	560
Surface	Not sanded
Water Absorption	Negligible

Table 4 - Mix design

CEM I 42.5 R	285 (kg/m ³)
Aggregate PET (10-20 mm)	429 (kg/m ³)
Crusher sand	761 (kg/m ³)
Water	170 (l/m ³)
Superplasticizer	2.9 (l/m ³)
Ratio water/cement	0.6
Consistence	S5
Volume mass	1648 (kg/m ³)
Compressive strength (28 dd)	15 MPa



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Laboratory Tests on sanded lightweight PET aggregate for structural concrete (type C granules)

Table 5

Diameter (mm)	10-25
Heap Weight (kg/m ³)	570
Grain Weight (kg/m ³)	1050
Surface	Sanded
Water Absorption	Negligible

Table 6 - Mix design

CEM I 42.5 R	285 (kg/m ³)
Aggregate PET (10-20 mm)	557 (kg/m ³)
Crushed sand	761 (kg/m ³)
Water	170 (l/m ³)
Superplasticizer	2.9 (l/m ³)
Ratio water/cement	0.6
Consistence	95
Volume mass	1780 (kg/m ³)
Compressive strength (28 dd)	27 MPa

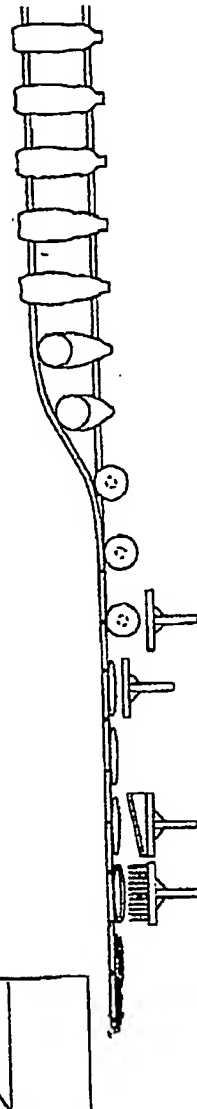
Laboratory Tests on sanded lightweight PET aggregate for structural concrete subjected to high pressure (grain weight 1.390 kg/cm³-type D granules)

Table 7 - Mix design

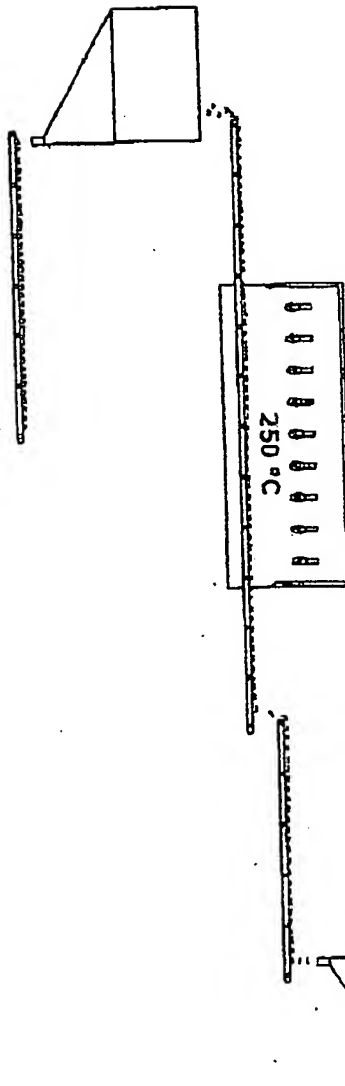
CEM I 42.5 R	435 (kg/m ³)
Aggregate PET (10-20 mm)	385 (kg/m ³)
Crushed sand	1088 (kg/m ³)
Water	175 (l/m ³)
Superplasticizer	6.5 (l/m ³)
Ratio water/cement	0.4
Consistence	95
Volume mass	2090 (kg/m ³)
Compressive strength (28 dd)	49.5 MPa

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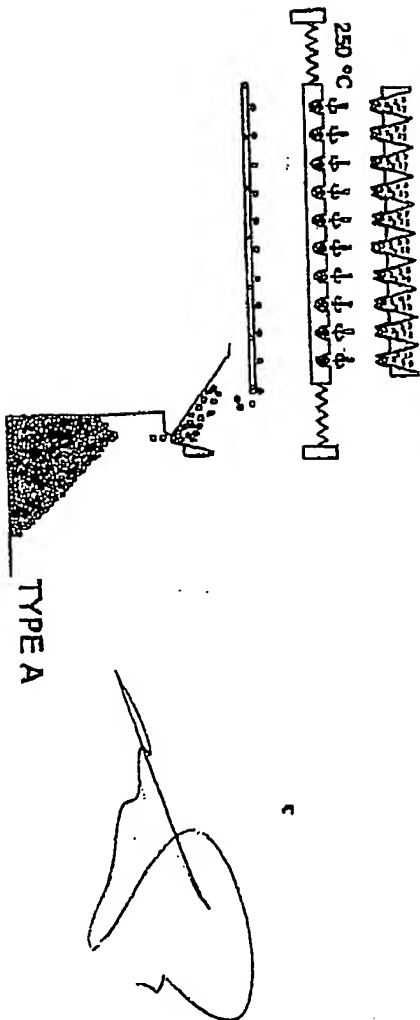
STEP 1



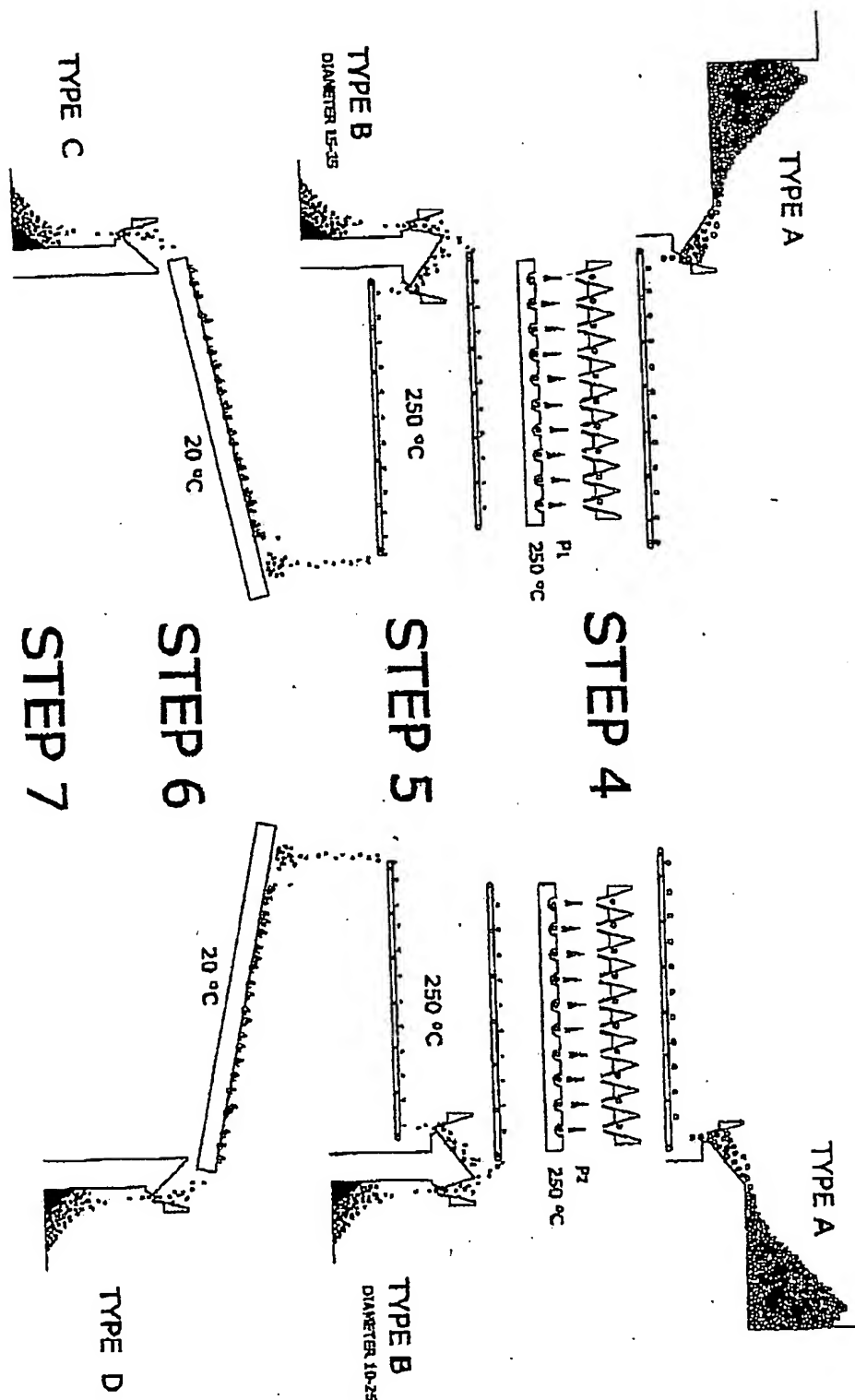
STEP 2



STEP 3



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I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.



Salvatore LO PRESTI

Date 13/10/2008